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Consommation et  
Affaires commerciales Canada

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Bureau des brevets

Patent Office

Ottawa, Canada  
K1A 0C9

(21)

2,084,829

(22)

1992/12/08

(43)

1994/06/09

5,084,7/87

(51) INTL.CL.<sup>5</sup> A43B-005/16

(19) (CA) APPLICATION FOR CANADIAN PATENT (12)

(54) Skate Boot with Moulded Plastic Overlay

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(57) 5 Claims

Notice: This application is as filed and may therefore contain an incomplete specification.

Canada

CCA 3254 (10-92) 41 7530-21-936-3254

1 0 JAN 2000

ABSTRACT

A skate boot is described, having a plastic overlay sewn or otherwise secured to the boot of the skate, wrapping around the heel of the boot from the medial to the lateral side of the ankle. The overlay increases the rigidity of the rear of the skate, to restrict pronation and supination, while adding impact resistance. Preferably, in order to permit dorsal and plantar flexion, the plastic overlay has several cut-out areas which allow for a controlled amount of flexion about a lateral axis, namely a heel flex cut-out area and side flex cut-out areas on either side in the instep area. Flexible inserts are preferably installed in the cut-out areas, to maintain extra impact protection while permitting flexion.

This invention relates to ice skates, and especially but not necessarily exclusively to those used for ice hockey.

In ice hockey, it is essential for the player to have a skate which is as rigid as possible, especially in  
5 terms of resistance to supination and pronation, i.e. movement about a longitudinal axis of the foot. Such rigidity provides the player with direct control over the skate blade edges, which is essential to controlled, balanced and powerful skating.

10 At the same time, the skate cannot be too rigid, particularly in terms of dorsal and plantar flexion, i.e. movement about a lateral axis, because the player has to be able to flex his ankle normally, to maximize power and control.

15 Also, since injury to the foot and ankle through impact is always a concern, whether through impact from a hockey puck or via a deliberate or accidental slash from a hockey stick, impact protection is highly desirable.

It is therefore an object of the invention to  
20 provide a skate which improves the overall strength and rigidity of the skate boot, particularly in terms of restricting supination and pronation, i.e. movement about a longitudinal axis.

It is a further object of the invention to provide  
25 improved impact protection.

Preferably, the invention restricts supination and pronation, but permits a certain amount of dorsal and plantar flexion, i.e. movement about a lateral axis.

In the invention, therefore, a relatively thick and therefore somewhat inflexible plastic overlay is sewn or otherwise secured to the boot of the skate, wrapping around the heel of the boot from the medial to the lateral side of the ankle. The overlay increases the rigidity of the rear of the skate, while obviously adding impact resistance.

Preferably, in order to permit dorsal and plantar flexion, the plastic overlay has several cut-out areas which allow for a certain amount of such flexion. For example, a heel flex cut-out area may be provided, and side flex cut-out areas may be provided on either side near the dorsal or instep area. Flexible inserts may be installed in the cut-out areas if desired, to maintain extra impact protection while permitting flexion.

Further features of the invention will be described or will become apparent in the course of the following detailed description.

In order that the invention may be more clearly understood, the preferred embodiment thereof will now be described in detail by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a skate with the preferred configuration of plastic overlay;

Fig. 2 is a side view of the skate;

Fig. 3 is a back view of the skate;

Fig. 4 is a plan view of the overlay, laid out flat;

Fig. 5 is a section at A-A of Fig. 4;

Fig. 6 is a section at B-B of Fig. 4;

Fig. 7 is a section at C-C of Fig. 4;

Fig. 8 is a section at D-D of Fig. 4;

Fig. 9 is a section at E-E of Fig. 4;

Fig. 10 is a plan view of the heel flex insert;

5 Fig. 11 is a cross-section of the heel flex insert;

Fig. 12 is a plan view of one of the side flex inserts; and

Fig. 13 is a cross-section of one of the side flex inserts.

10 As illustrated in the drawings, a plastic overlay 1 is secured to the skate boot 2, by any suitable means such as sewing 3. Preferably, the overlay is injection moulded, and in the mould is preshaped to approximately the shape of the boot heel. The overlay has an upper portion 4 with a heel  
15 flex cut-out area 5, an integral lower rear portion 6, and integral side panels 7. V-shaped side cut-out areas 8 are provided towards the upper side edges of the upper portion. Preferably, flexible inserts are positioned in the cut-out areas, namely a heel flex insert 9 and two side flex inserts  
20 10.

As can be appreciated from the drawings, the cut-out areas permit flexion of the skate about a lateral axis through the malleoli, corresponding with the natural dorsal and  
plantar flexion of the foot. In dorsal flexion, i.e. as the  
25 player moves his toes up towards his shin, the side flex inserts 10 compress slightly, while the heel flex insert 9 expands slightly. In plantar flexion, i.e. when the player

points his toes, then of course the side flex inserts expand while the heel flex insert compresses.

If there are no inserts in the cut-out areas, then there is no added resistance to dorsal and plantar flexion.

5 When inserts are used, flexion is provided by ensuring that the inserts may be expanded or compressed easily. Therefore, as seen in Figs. 11 and 13, the inserts preferably have an accordion-fold profile, by virtue of corrugations 11. In order to retain the inserts in place, the overlay has moulded  
10 undercut areas 12, as seen in Figs. 5 and 8, to receive the flanged portions 13 of the inserts. Preferably, the overlay and inserts are sewn together, through the flanged portions, prior to installation on the skate boot.

By virtue of its thickness (e.g. about 0.100 inch),  
15 the overlay is somewhat inflexible, and increases the rigidity of the rear of the skate, particularly about a longitudinal axis by virtue of the continuity between the upper portion 4 and the side panels 7, and prevents or restricts pronation and supination. The actual thickness of the overlay is obviously  
20 not critical; varying degrees of thickness will produce varying degrees of restriction of pronation and supination.

The overlay and the inserts together obviously add impact resistance as well.

Inverted U-shaped cut-out areas 14 are provided  
25 between the rear portion 6 and side panels 7, not for the purpose of adding flexibility, but simply to reduce the amount of plastic required, since additional support in that area is not required, and to add visual impact to the skate. It

should be readily appreciated that these latter cut-outs could be omitted, i.e. the overlay could be continuous around its lower aspect instead of being divided into rear and side panels.

5                   It should also be appreciated that the heel flex insert 9 and side flex inserts 10 could be omitted, although in that event the impact resistance in those areas would not be quite as great.

10                   It should also be appreciated that the heel flex cut-out area 5 and the side flex cut-out areas 8 could be omitted, in which case a very rigid boot would be created, with limited dorsal and plantar flexion. Such a degree of rigidity may not be advantageous generally, but might be appreciated by some players.

15                   It will be appreciated that the above description relates to the preferred embodiment by way of example only. Many variations on the invention will be obvious to those knowledgeable in the field, and such obvious variations are within the scope of the invention as described and claimed,  
20                   whether or not expressly described.



THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE  
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. In an ice skate comprising a boot and a skate blade  
secured beneath the boot, the improvement comprising a plastic  
5 overlay secured to the boot of the skate, wrapping around a  
substantial portion of the back of the boot from the medial to  
the lateral side.
2. An ice skate as recited in claim 1, where said  
plastic overlay has a plurality of cut-out areas therein,  
10 whereby normal flexion of said skate boot is permitted within  
said cut-out areas.
3. An ice skate as recited in claim 2, where said cut-  
out areas have flexible plastic inserts secured therein across  
said cut-out areas which permit compression or expansion  
15 within said cut-out areas.
4. An ice skate as recited in claim 1, where there are  
at least three said cut-outs, namely one in the area of the  
heel of the boot at approximately the level of the malleoli of  
a person wearing the skate, and one on each of the medial and  
20 lateral sides of the skate from a point adjacent the malleoli  
and opening upwardly and forwardly therefrom towards the lace  
area of said skate boot.

5. An ice skate as recited in claim 4, where said cut-out areas have flexible plastic inserts secured therein across said cut-out areas which permit compression or expansion within said cut-out areas.

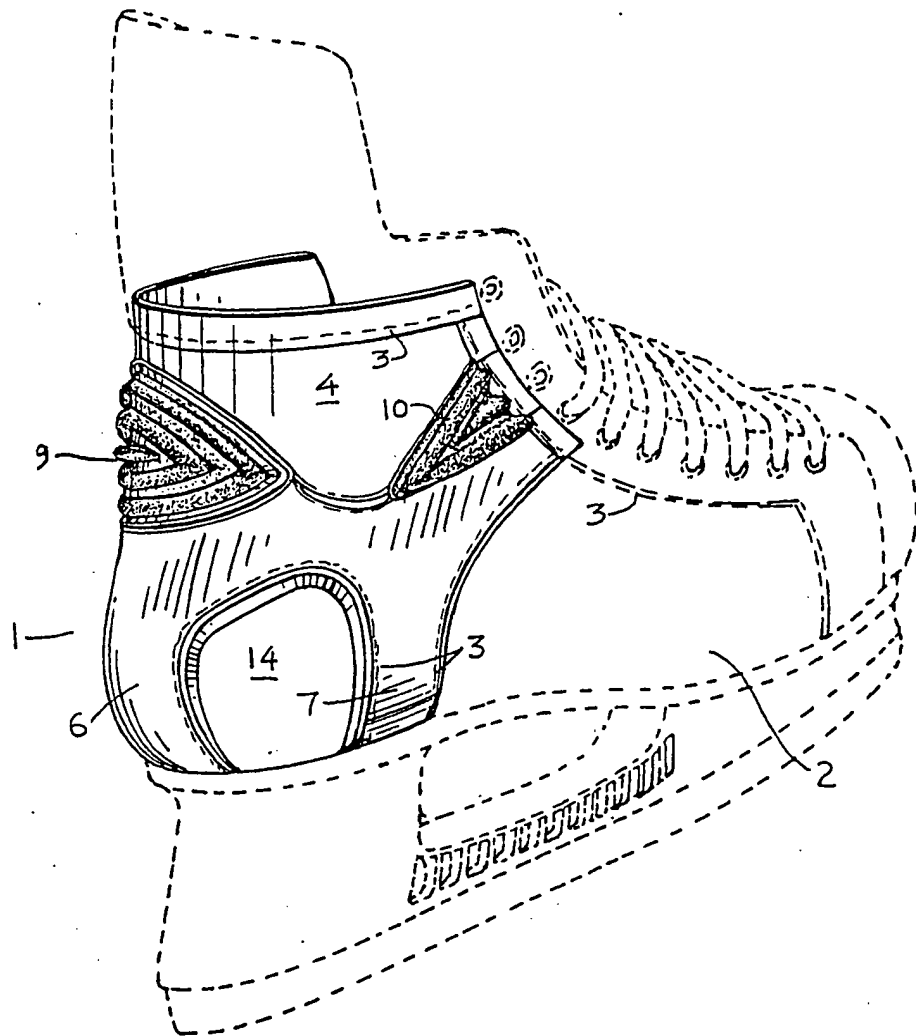


FIG.1.

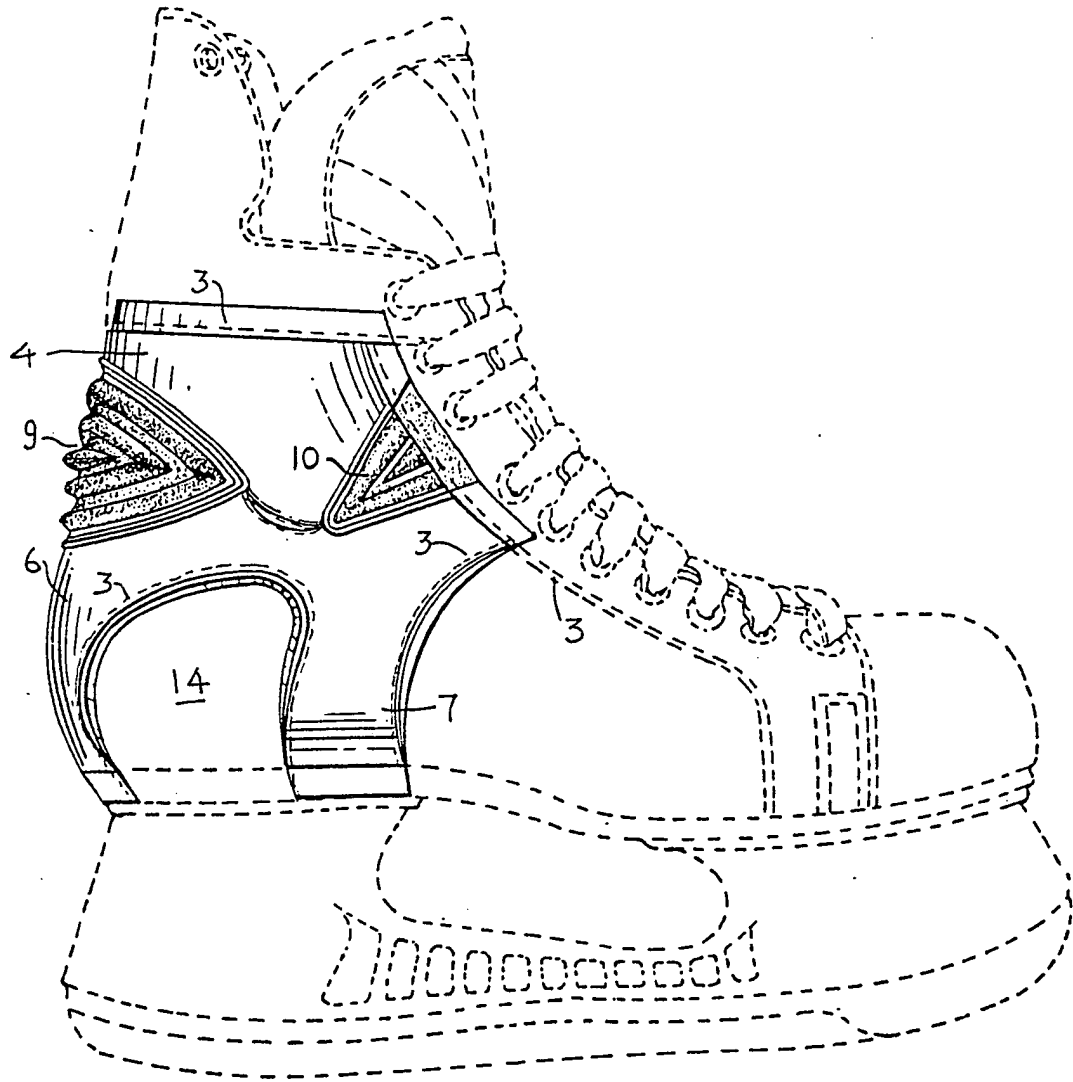


FIG. 2.

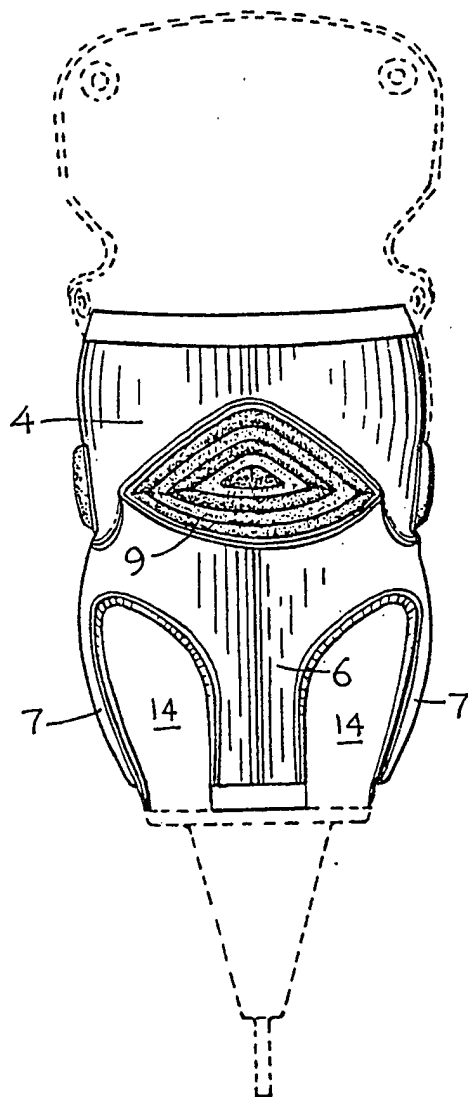


FIG.3.

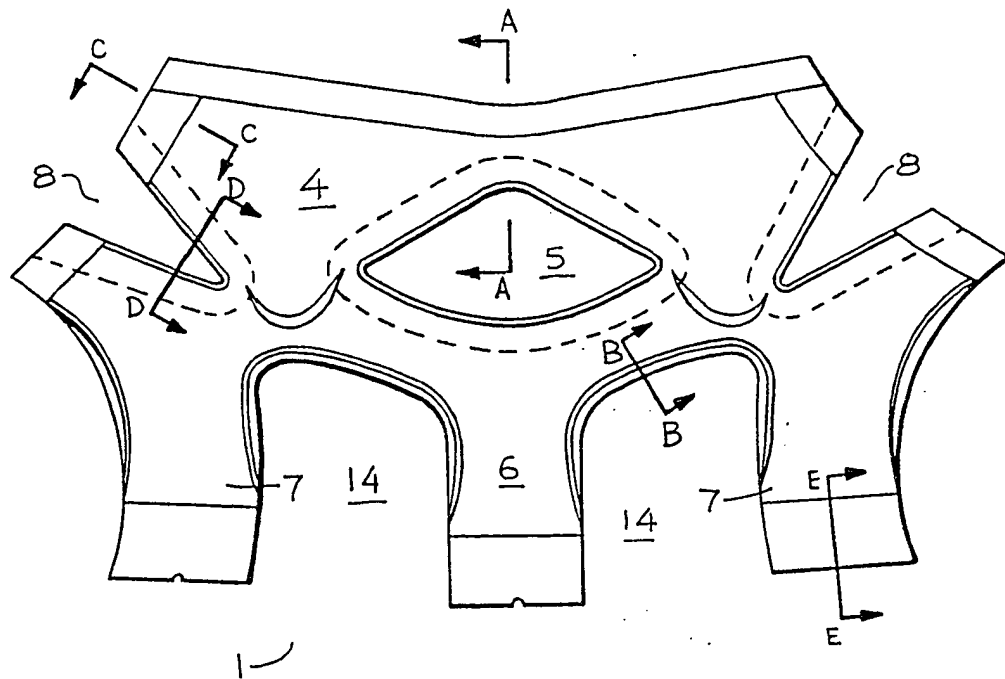


FIG. 4.

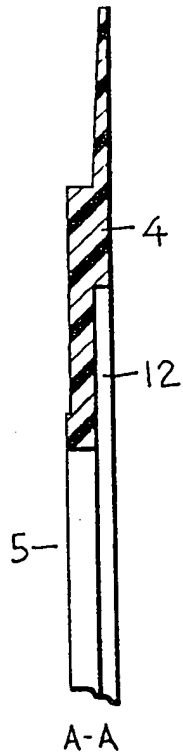


FIG. 5



FIG. 6

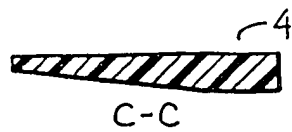


FIG. 7

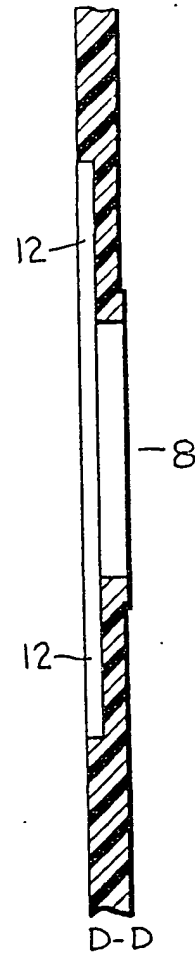


FIG. 8

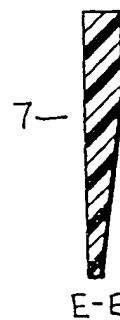


FIG. 9

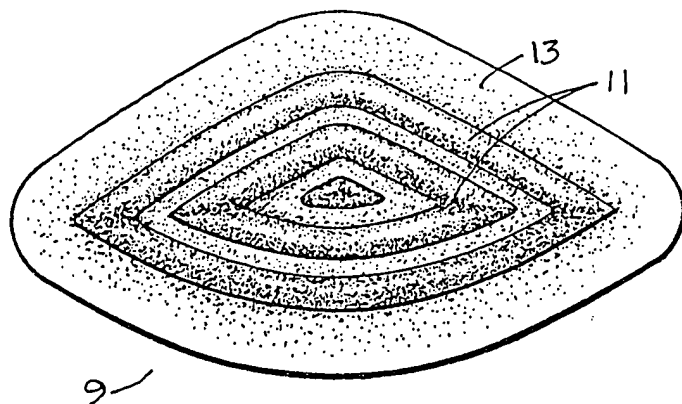


FIG. 10



FIG. 11

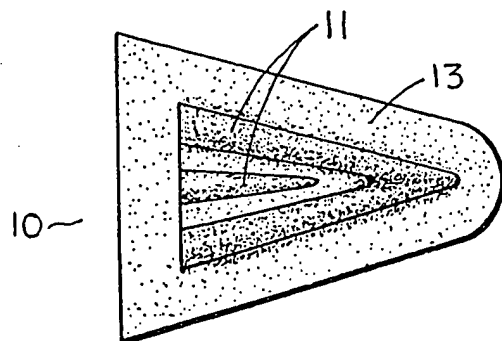


FIG. 12

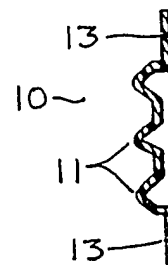


FIG. 13